

H1584

0056887

Eberline Services
W.O. No. R1-11-055-7143

Bechtel Hanford Inc.
SDG H1584

Case Narrative

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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1584 was composed of one solid (soil) sample designated under SAF No. B02-006 with a Project Designation of: 100 Area Source Characterization 200-CS-1 OU – Soil Sampling.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 14, 2002.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.4 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

RECEIVED
APR 16 2002
EDMC

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Melissa C. Mannion
Program Manager

1/28/02
Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

SDG 7143

Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford

Contract No. 630

Case no SDG H1584

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13D73	200 East	SOLID		R111055-01	B02-006	B02-006-08	11/02/01 07:30
Method Blank		SOLID		R111055-03	B02-006		
Lab Control Sample		SOLID		R111055-02	B02-006		
Duplicate (R111055-01)	200 East	SOLID		R111055-04	B02-006		11/02/01 07:30

SAMPLE SUMMARY

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CS

Version 3.06

Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

SDG 7143

Contact Melissa C. Mannion

QC SUMMARY

Client Hanford

Contract No. 630

Case no SDG H1584

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7143	B02-006-08	B13D73	SOLID	94.0	1218 g		11/07/01 5	R111055-01	7143-001
		Method Blank	SOLID					R111055-03	7143-003
		Lab Control Sample	SOLID					R111055-02	7143-002
		Duplicate (R111055-01)	SOLID	94.0	1218 g		11/07/01 5	R111055-04	7143-004

QC SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

SDG 7143

Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford

Contract No. 630

Case no SDG H1584

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Soil	7012-169	5.0	1			1	1	1/1	
NP	SOLID	Neptunium in Soil	7012-169	5.0	1			1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	7012-169	5.0	1			1	1	1/1	
TH	SOLID	Thorium, Isotopic in Soil	7012-169	5.0	1			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Soil	7012-169	10.0	1			1	1	1/1	
Gas Proportional Counting											
93A	SOLID	Gross Alpha in Soil	7012-169	20.0	1			1	1	1/1	
93B	SOLID	Gross Beta in Soil	7012-169	15.0	1			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	7012-169	15.0	1			1	1	1/1	
Kinetic Phosphorimetry											
U_T	SOLID	Uranium, Total in Soil	7012-169	9.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

SDG 7143

Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford

Contract No. 630

Case no SDG H1584

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED			SUF-					
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B13D73		R111055-01	7143-001	93A/93		01/04/02	01/14/02	MCM	Gross Alpha in Soil	
200 East	SOLID	11/02/01	7143-001	93B/93		01/04/02	01/14/02	MCM	Gross Beta in Soil	
B02-006-08	B02-006	11/07/01	7143-001	AM		12/27/01	01/14/02	MCM	Americium 241 in Soil	
			7143-001	GAM		12/18/01	01/14/02	MCM	Gamma Scan	
			7143-001	NP		12/20/01	01/14/02	MCM	Neptunium in Soil	
			7143-001	PU		12/21/01	01/14/02	MCM	Plutonium, Isotopic in Solids	
			7143-001	SR		12/18/01	01/14/02	MCM	Total Strontium in Soil	
			7143-001	TH		01/09/02	01/14/02	MCM	Thorium, Isotopic in Soil	
			7143-001	U_T		12/19/01	01/14/02	MCM	Uranium, Total in Soil	
Method Blank		R111055-03	7143-003	93A/93		01/02/02	01/14/02	MCM	Gross Alpha in Soil	
	SOLID		7143-003	93B/93		01/02/02	01/14/02	MCM	Gross Beta in Soil	
	B02-006		7143-003	AM		12/27/01	01/14/02	MCM	Americium 241 in Soil	
			7143-003	GAM		12/17/01	01/14/02	MCM	Gamma Scan	
			7143-003	NP		12/20/01	01/14/02	MCM	Neptunium in Soil	
			7143-003	PU		12/21/01	01/14/02	MCM	Plutonium, Isotopic in Solids	
			7143-003	SR		12/18/01	01/14/02	MCM	Total Strontium in Soil	
			7143-003	TH		01/08/02	01/14/02	MCM	Thorium, Isotopic in Soil	
			7143-003	U_T		12/19/01	01/14/02	MCM	Uranium, Total in Soil	
Lab Control Sample		R111055-02	7143-002	93A/93		01/07/02	01/14/02	MCM	Gross Alpha in Soil	
	SOLID		7143-002	93B/93		01/07/02	01/14/02	MCM	Gross Beta in Soil	
	B02-006		7143-002	AM		12/28/01	01/14/02	MCM	Americium 241 in Soil	
			7143-002	GAM		12/15/01	01/14/02	MCM	Gamma Scan	
			7143-002	NP		12/20/01	01/14/02	MCM	Neptunium in Soil	
			7143-002	PU		12/21/01	01/14/02	MCM	Plutonium, Isotopic in Solids	
			7143-002	SR		12/18/01	01/14/02	MCM	Total Strontium in Soil	
			7143-002	TH		01/08/02	01/14/02	MCM	Thorium, Isotopic in Soil	
			7143-002	U_T		12/19/01	01/14/02	MCM	Uranium, Total in Soil	
Duplicate (R111055-01)		R111055-04	7143-004	93A/93		01/08/02	01/14/02	MCM	Gross Alpha in Soil	
200 East	SOLID	11/02/01	7143-004	93B/93		01/08/02	01/14/02	MCM	Gross Beta in Soil	
	B02-006	11/07/01	7143-004	AM		12/27/01	01/14/02	MCM	Americium 241 in Soil	
			7143-004	GAM		12/18/01	01/14/02	MCM	Gamma Scan	
			7143-004	NP		12/20/01	01/14/02	MCM	Neptunium in Soil	
			7143-004	PU		12/21/01	01/14/02	MCM	Plutonium, Isotopic in Solids	
			7143-004	SR		12/18/01	01/14/02	MCM	Total Strontium in Soil	
			7143-004	TH		01/08/02	01/14/02	MCM	Thorium, Isotopic in Soil	
			7143-004	U_T		12/19/01	01/14/02	MCM	Uranium, Total in Soil	

WORK SUMMARY

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Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-CWS

Version 3.06

Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

SDG 7143

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 630

Case no SDG H1584

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	802-006	Gross Alpha in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	802-006	Gross Beta in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
AM	802-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	802-006	Gamma Scan	GAMMA_GS	1			1	1	1	4
NP	802-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	1			1	1	1	4
PU	802-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	802-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TH	802-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	1			1	1	1	4
U_T	802-006	Uranium, Total in Soil	UTOT_KPA	1			1	1	1	4
TOTALS				9			9	9	9	36

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Version 3.06

Report date 01/14/02

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1584

R111055-03

Method Blank

METHOD BLANK

SDG <u>7143</u>	Client/Case no <u>Hanford</u>	SDG <u>H1584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R111055-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7143-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B02-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.330	1.3	2.7	10	U	93A
Gross Beta	12587-47-2	-0.406	3.3	5.6	15	U	93B
Total Strontium	SR-RAD	-0.048	0.11	0.23	1.0	U	SR
Thorium 228	14274-82-9	0.031	0.12	0.23		U	TH
Thorium 230	14269-63-7	-0.152	0.18	0.37	1.0	U	TH
Thorium 232	TH-232	-0.030	0.061	0.23	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.002	0.10	U	U_T
Neptunium 237	13994-20-2	0	0.058	0.086	1.0	U	NP
Plutonium 238	13981-16-3	0	0.026	0.098	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.013	0.026	0.098	1.0	U	PU
Americium 241	14596-10-2	-0.026	0.11	0.25	1.0	U	AM
Potassium 40	13966-00-2	U		0.32		U	GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	U		0.031	0.10	U	GAM
Radium 228	15262-20-1	U		0.083	0.20	U	GAM
Europium 152	14683-23-9	U		0.046	0.10	U	GAM
Europium 154	15585-10-1	U		0.044	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Thorium 228	14274-82-9	U		0.028		U	GAM
Thorium 232	TH-232	U		0.083		U	GAM
Uranium 235	15117-96-1	U		0.066		U	GAM
Uranium 238	U-238	U		2.5		U	GAM
Americium 241	14596-10-2	U		0.056		U	GAM

200 Area Source Chara. 200-CS-1 OU

QC-BLANK 40582

METHOD BLANKS
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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

R111055-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7143</u>	Client/Case no <u>Hanford</u>	SDG <u>H1584</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>No. 630</u>	
Lab sample id <u>R111055-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7143-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>802-006</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	226	8.8	2.0	10		93A	200	8.0	113	65-135	70-130
Gross Beta	224	6.5	4.2	15		93B	217	8.7	103	76-124	70-130
Total Strontium	22.8	0.85	0.24	1.0		SR	21.8	0.87	105	82-118	80-120
Thorium 230	41.5	1.6	0.31	1.0		TH	40.8	1.6	102	89-111	80-120
Total Uranium (ug/g)	16.7	2.1	0.020	0.10		U_T	16.5	0.66	101	76-124	80-120
Neptunium 237	19.0	1.5	0.19	1.0		NP	19.9	0.80	95	85-115	80-120
Plutonium 238	23.9	1.6	0.096	1.0		PU	24.6	0.98	97	86-114	80-120
Plutonium 239/240	26.0	1.7	0.096	1.0		PU	26.4	1.1	98	86-114	80-120
Americium 241	19.8	2.0	0.26	1.0		AM	19.1	0.76	104	81-119	80-120
Cobalt 60	1.17	0.075	0.034	0.050		GAM	1.04	0.042	112	72-128	80-120
Cesium 137	1.33	0.067	0.040	0.10		GAM	1.22	0.049	109	73-127	80-120

200 Area Source Chara. 200-CS-1 OU

QC-LCS 40581

LAB CONTROL SAMPLES

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
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Report date <u>01/14/02</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

R111055-04

B13D73

DUPLICATE

SDG <u>7143</u>		Client/Case no <u>Hanford</u>		SDG <u>H1584</u>
Contact <u>Melissa C. Mannion</u>		Case no <u>No. 630</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R111055-04</u>	Lab sample id <u>R111055-01</u>	Client sample id <u>B13D73</u>		
Dept sample id <u>7143-004</u>	Dept sample id <u>7143-001</u>	Location/Matrix <u>200 East</u> SOLID		
	Received <u>11/07/01</u>	Collected/Weight <u>11/02/01 07:30</u> <u>1218 g</u>		
% solids <u>94.0</u>	% solids <u>94.0</u>	Custody/SAF No <u>B02-006-08</u> <u>B02-006</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	2.31	3.0	3.9	10	U	93A	2.42	2.7	3.2	U	-		
Gross Beta	58.2	6.1	5.9	15		93B	55.8	6.3	6.5		4	39	
Total Strontium	23.1	0.88	0.23	1.0		SR	24.6	0.63	0.17		6	22	
Thorium 228	0.673	0.28	0.21			TH	0.451	0.13	0.085		40	83	
Thorium 230	0.278	0.28	0.34	1.0	U	TH	0.806	0.21	0.28	J	97	98	
Thorium 232	0.362	0.22	0.21	1.0	J	TH	0.358	0.11	0.053	J	1	103	
Total Uranium (ug/g)	0.562	0.072	0.020	0.10		U_T	0.612	0.078	0.020		9	33	
Neptunium 237	-0.027	0.054	0.21	1.0	U	NP	0	0.061	0.092	U	-		
Plutonium 238	0.013	0.027	0.10	1.0	U	PU	0.006	0.012	0.023	U	-		
Plutonium 239/240	0.013	0.027	0.10	1.0	U	PU	-0.009	0.018	0.043	U	-		
Americium 241	0.029	0.059	0.22	1.0	U	AM	0	0.12	0.23	U	-		
Potassium 40	8.84	0.84	0.58			GAM	10.4	0.73	0.34		16	36	
Cobalt 60	U		0.041	0.050	U	GAM	U		0.036	U	-		
Cesium 137	U		0.038	0.10	U	GAM	U		0.034	U	-		
Radium 226	0.336	0.076	0.082	0.10		GAM	0.333	0.062	0.068		1	54	
Radium 228	0.521	0.18	0.20	0.20		GAM	0.660	0.14	0.13		24	66	
Europium 152	U		0.090	0.10	U	GAM	U		0.077	U	-		
Europium 154	U		0.14	0.10	U	GAM	U		0.12	U	-		
Europium 155	U		0.12	0.10	U	GAM	U		0.13	U	-		
Thorium 228	0.525	0.045	0.049			GAM	0.543	0.041	0.041		3	36	
Thorium 232	0.521	0.18	0.20			GAM	0.660	0.14	0.13		24	66	
Uranium 235	U		0.15		U	GAM	U		0.15	U	-		
Uranium 238	U		5.2		U	GAM	U		4.4	U	-		
Americium 241	U		0.15		U	GAM	U		0.27	U	-		

200 Area Source Chara. 200-CS-1 OU

QC-DUP#1 40583

DUPLICATES

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SUMMARY DATA SECTION

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Lab id TMANC
 Protocol Hanford
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 Form DVD-DUP
 Version 3.06
 Report date 01/14/02

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H1584

R111055-01

B13D73

DATA SHEET

SDG <u>7143</u>	Client/Case no <u>Hanford</u>	SDG <u>H1584</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R111055-01</u>	Client sample id <u>B13D73</u>	
Dept sample id <u>7143-001</u>	Location/Matrix <u>200 East</u>	<u>SOLID</u>
Received <u>11/07/01</u>	Collected/Weight <u>11/02/01 07:30</u>	<u>1218 g</u>
% solids <u>94.0</u>	Custody/SAF No <u>B02-006-08</u>	<u>B02-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	2.42	2.7	3.2	10	U	93A
Gross Beta	12587-47-2	55.8	6.3	6.5	15		93B
Total Strontium	SR-RAD	24.6	0.63	0.17	1.0		SR
Thorium 228	14274-82-9	0.451	0.13	0.085			TH
Thorium 230	14269-63-7	0.806	0.21	0.28	1.0	J	TH
Thorium 232	TH-232	0.358	0.11	0.053	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	0.612	0.078	0.020	0.10		U_T
Neptunium 237	13994-20-2	0	0.061	0.092	1.0	U	NP
Plutonium 238	13981-16-3	0.006	0.012	0.023	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.009	0.018	0.043	1.0	U	PU
Americium 241	14596-10-2	0	0.12	0.23	1.0	U	AM
Potassium 40	13966-00-2	10.4	0.73	0.34			GAM
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Cesium 137	10045-97-3	U		0.034	0.10	U	GAM
Radium 226	13982-63-3	0.333	0.062	0.068	0.10		GAM
Radium 228	15262-20-1	0.660	0.14	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.077	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.543	0.041	0.041			GAM
Thorium 232	TH-232	0.660	0.14	0.13			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		4.4		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

200 Area Source Chara. 200-CS-1 OU

DATA SHEETS

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>01/14/02</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test AM Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY AMERICIUM 241 IN SOIL ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Americium PLANCHET	241
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Preparation batch 7012-169

B13D73	R111055-01	7143-001	U
BLK (QC ID=40582)	R111055-03	7143-003	U
LCS (QC ID=40581)	R111055-02	7143-002	ok
Duplicate (R111055-01)	R111055-04	7143-004	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 169

B13D73	R111055-01	0.23	0.500	80	104	55	12/27/01	12/27	SS-031
BLK (QC ID=40582)	R111055-03	0.25	0.500	84	105	12/27/01	12/27	SS-041	
LCS (QC ID=40581)	R111055-02	0.26	0.500	81	105	12/27/01	12/28	SS-033	
Duplicate (R111055-01)	R111055-04	0.22	0.500	80	105	55	12/27/01	12/27	SS-049
(QC ID=40583)									

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 3	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-940	Plutonium Separation and Purification, rev 3	
CP-960	Americium-Curium Purification, Large Aliquot, rev 4	
CP-008	Heavy Element Electroplating, rev 6	

AVERAGES ± 2 SD	MDA	0.24 ± 0.037
FOR 4 SAMPLES	YIELD	81 ± 4

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TNANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test NP Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Neptunium 237
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Preparation batch 7012-169

B13D73	R111055-01	7143-001	U
BLK (QC ID=40582)	R111055-03	7143-003	U
LCS (QC ID=40581)	R111055-02	7143-002	ok
Duplicate (R111055-01)	R111055-04	7143-004	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 169

B13D73	R111055-01	0.092	0.500	68	112	48	12/19/01	12/20	SS-041
BLK (QC ID=40582)	R111055-03	0.086	0.500	71	112	12/19/01	12/20	SS-043	
LCS (QC ID=40581)	R111055-02	0.19	0.500	84	113	12/19/01	12/20	SS-042	
Duplicate (R111055-01) (QC ID=40583)	R111055-04	0.21	0.500	73	112	48	12/19/01	12/20	SS-045

Nominal values and limits from method 1.0 0.500 20-105 100 180

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
CP-060	Soil Preparation, rev 3	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2	

AVERAGES ± 2 SD	MDA	0.14 ± 0.13
FOR 4 SAMPLES	YIELD	74 ± 14

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Plutonium 238	Plutonium 239/240
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Preparation batch 7012-169

B13073	R111055-01	7143-001	U	U
BLK (QC ID=40582)	R111055-03	7143-003	U	U
LCS (QC ID=40581)	R111055-02	7143-002	ok	ok
Duplicate (R111055-01)	R111055-04	7143-004	- U	- U

Nominal values and limits from method	RDLs (pCi/g)	1.0	1.0
200 Area Source Chara. 200-CS-1 OU			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 169

B13073	R111055-01	0.043	0.500	71	1038	49	12/21/01	12/21	SS-045
BLK (QC ID=40582)	R111055-03	0.098	0.500	89	201	12/21/01	12/21	SS-043	
LCS (QC ID=40581)	R111055-02	0.096	0.500	93	200	12/21/01	12/21	SS-032	
Duplicate (R111055-01) (QC ID=40583)	R111055-04	0.10	0.500	82	202	49	12/21/01	12/21	SS-044

Nominal values and limits from method	1.0	0.500	20-105	100	100	180
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PROCEDURES	REFERENCE	PUISO_PLATE_AEA
CP-060	Soil Preparation, rev 3	
CP-940	Plutonium Separation and Purification, rev 3	
CP-008	Heavy Element Electroplating, rev 6	

AVERAGES ± 2 SD	MDA	0.084 ± 0.055
FOR 4 SAMPLES	YIELD	84 ± 19

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 230
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Preparation batch 7012-169

B13073	R111055-01	7143-001	0.806 J
BLK (QC ID=40582)	R111055-03	7143-003	U
LCS (QC ID=40581)	R111055-02	7143-002	ok
Duplicate (R111055-01)	R111055-04	7143-004	ok U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source Chara. 200-CS-1 0U

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 169

B13073	R111055-01	0.28	0.250	92	731	68	01/07/02	01/09	SS-034
BLK (QC ID=40582)	R111055-03	0.37	0.250	87	172	01/07/02	01/08	SS-043	
LCS (QC ID=40581)	R111055-02	0.31	0.250	97	629	01/07/02	01/08	SS-034	
Duplicate (R111055-01)	R111055-04	0.34	0.250	93	172	67	01/07/02	01/08	SS-044
(QC ID=40583)									

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-905	Thorium in Water and Dissolved Solid Sample	
	Using TRU and AG 1x8 Resin, rev 1	
CP-008	Heavy Element Electroplating, rev 6	

AVERAGES ± 2 SD	MDA	0.32 ± 0.077
FOR 4 SAMPLES	YIELD	92 ± 8

METHOD SUMMARIES

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SUMMARY DATA SECTION

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test SR Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY TOTAL STRONTIUM IN SOIL BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	Total Strontium
Preparation batch 7012-169				
B13D73	R111055-01		7143-001	24.6
BLK (QC ID=40582)	R111055-03		7143-003	U
LCS (QC ID=40581)	R111055-02		7143-002	ok
Duplicate (R111055-01)	R111055-04		7143-004	ok
Nominal values and limits from method				
200 Area Source Chara. 200-CS-1 OU			RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 7012-169 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 169															
B13D73	R111055-01			0.17	1.00			98		200			46	12/18/01	GRB-220
BLK (QC ID=40582)	R111055-03			0.23	1.00			95		100				12/18/01	GRB-201
LCS (QC ID=40581)	R111055-02			0.24	1.00			94		100				12/18/01	GRB-218
Duplicate (R111055-01)	R111055-04			0.23	1.00			97		87			46	12/18/01	GRB-205
(QC ID=40583)															
Nominal values and limits from method				1.0	1.00			30-105		100			180		

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-502 Strontium in Solids, rev 4
CP-519 Strontium Planchet Demounting and Preparation for
90Y Decontamination, rev 3

AVERAGES ± 2 SD MDA 0.22 ± 0.064
FOR 4 SAMPLES YIELD 96 ± 4

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test 93A Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
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Preparation batch 7012-169

B13D73	R111055-01	93		7143-001	U
BLK (QC ID=40582)	R111055-03	93		7143-003	U
LCS (QC ID=40581)	R111055-02	93		7143-002	ok
Duplicate (R111055-01)	R111055-04	93		7143-004	- U

Nominal values and limits from method RDLs (pCi/g) 10
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 20.0 % Reference Lab Notebook 7012 pg. 169

B13D73	R111055-01	93		3.2	0.100			41	100			63	12/27/01	01/04	GRB-102
BLK (QC ID=40582)	R111055-03	93		2.7	0.100			20	100				12/27/01	01/02	GRB-101
LCS (QC ID=40581)	R111055-02	93		2.0	0.100			20	300				12/27/01	01/07	GRB-115
Duplicate (R111055-01) (QC ID=40583)	R111055-04	93		3.9	0.100			42	100			67	12/27/01	01/08	GRB-109

Nominal values and limits from method 10 0.100 5-250 100 180

PROCEDURES	REFERENCE	900.0_ALPHA_BETA_GPC
CP-060	Soil Preparation, rev 3	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3	

AVERAGES ± 2 SD	MDA	3.0	±	1.6
FOR 4 SAMPLES	RESIDUE	31	±	25

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	TMANC
Protocol	Hanford
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Form	DVD-CMS
Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test 938 Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
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Preparation batch 7012-169

B13D73	R111055-01	93		7143-001	55.8
BLK (QC ID=40582)	R111055-03	93		7143-003	U
LCS (QC ID=40581)	R111055-02	93		7143-002	ok
Duplicate (R111055-01)	R111055-04	93		7143-004	ok

Nominal values and limits from method RDLs (pCi/g) 15
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 169

B13D73	R111055-01	93		6.5	0.100			41	100			63	12/27/01	01/04	GRB-102
BLK (QC ID=40582)	R111055-03	93		5.6	0.100			20	100				12/27/01	01/02	GRB-101
LCS (QC ID=40581)	R111055-02	93		4.2	0.100			20	300				12/27/01	01/07	GRB-115
Duplicate (R111055-01) (QC ID=40583)	R111055-04	93		5.9	0.100			42	100			67	12/27/01	01/08	GRB-109

Nominal values and limits from method 15 0.100 5-250 100 180

PROCEDURES	REFERENCE	900.0 ALPHABETA_GPC
CP-060	Soil Preparation, rev 3	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3	

AVERAGES ± 2 SD	MDA	5.6	±	1.9
FOR 4 SAMPLES	RESIDUE	31	±	25

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test GAM Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7012-169					
B13D73	R111055-01		7143-001	U	U
BLK (QC ID=40582)	R111055-03		7143-003	U	U
LCS (QC ID=40581)	R111055-02		7143-002	ok	ok
Duplicate (R111055-01)	R111055-04		7143-004	- U	- U

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF min	COUNT keV	FWHM keV	DRIFT HELD	DAYS PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7012-169 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 169															
B13D73	R111055-01		0.27	789					105			46	12/12/01	12/18	MB,05,00
BLK (QC ID=40582)	R111055-03		0.18	789					115				12/12/01	12/17	01,03,00
LCS (QC ID=40581)	R111055-02		0.034	789					102				12/12/01	12/15	MB,05,00
Duplicate (R111055-01)	R111055-04		0.34	789					140			46	12/12/01	12/18	02,03,00
(QC ID=40583)															
Nominal values and limits from method			0.050 789					100					180		

PROCEDURES REFERENCE GAMMA_GS
CP-060 Soil Preparation, rev 3
CP-100 Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD MDA 0.21 ± 0.26
FOR 4 SAMPLES YIELD ±

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1584

Test U T Matrix SOLID
SDG 7143
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	Total Uranium
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Preparation batch 7012-169

B13D73	R111055-01	7143-001	0.612
BLK (QC ID=40582)	R111055-03	7143-003	U
LCS (QC ID=40581)	R111055-02	7143-002	ok
Duplicate (R111055-01)	R111055-04	7143-004	ok

Nominal values and limits from method RDLs (ug/g) 0.10
200 Area Source Chara. 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA ug/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
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Preparation batch 7012-169 2σ prep error 9.0 % Reference Lab Notebook 7012 pg. 169

B13D73	R111055-01		0.020	0.100								47	12/19/01	12/19 KPA-001
BLK (QC ID=40582)	R111055-03		0.002	0.100									12/19/01	12/19 KPA-001
LCS (QC ID=40581)	R111055-02		0.020	0.100									12/19/01	12/19 KPA-001
Duplicate (R111055-01)	R111055-04		0.020	0.100								47	12/19/01	12/19 KPA-001
(QC ID=40583)														

Nominal values and limits from method 0.10 0.100 180

PROCEDURES	REFERENCE	UTOT_KPA
CP-060		Soil Preparation, rev 3
CP-070		Soil Dissolution, < 1.0g Aliquot, rev 4
CP-044		Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 3
CP-928		Total Uranium by Kinetic Phosphorimetry, rev 3

AVERAGES ± 2 SD	MDA	<u>0.016</u> ± <u>0.018</u>
FOR 4 SAMPLES	YIELD	_____ ± _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	<u>TMANC</u>
Protocol	<u>Hanford</u>
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Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2				
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		H1584 (744) 7143		SAF No. B02-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 99-002		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex								
Shipped To AMARECRA		Offsite Property No. A020003				Bill of Lading/Air Bill No. 42357954-8740								
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 6720pm A/X DIRECT ON SOIL TIC TO: B13D83 Special Handling and/or Storage				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None	
				Type of Container		1	1	1	1	1	1	1	1	1
				No. of Container(s)		1	1	1	1	1	1	1	1	1
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.		See item (2) in Special Instructions.		See item (3) in Special Instructions.		See item (4) in Special Instructions.		PCBs - 8082		
										pH (Soil) - 9045		VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)		
												Hydrazine - D1385		
Sample No.		Matrix *		Sample Date		Sample Time								
B13D73		SOIL		11/2/01		0730		X						
B13D74		SOIL												
B13D75		SOIL												
B13D76		SOIL												
B13D77		SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium (2) ICP-Metals - 6010A (Supertech) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP-Metals - 6010A (Supertech) (Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7477 (64); Chromium Hex - 7196 (3) NO3/VOA - 353.2 IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Solids - 9030; Ammonia - 950.9; Total Oxygen - 9810 (4) Semi-VOA - 8270A (Add-On) (Triethylphosphate); TTH Diesel Range - WTPH-D				Date/Time		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title		Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time								

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client:	<u>Bechtel Hanford Inc.</u>	Date/Time received	<u>11-7-01 9:30 AM</u>
CoC No.	<u>B02-006-08</u>		
Container I.D. No.	<u>ERC 99-002</u>	Requested TAT (Days)	<u>45</u> P.O. Received Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
INSPECTION			
1.	Custody seals on shipping container intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
2.	Custody seals on shipping container dated & signed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
3.	Custody seals on sample containers intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
4.	Custody seals on sample containers dated & signed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
5.	Cooler Temperature: _____	Packing material is:	Wet <input type="checkbox"/> Dry <input checked="" type="checkbox"/>
6.	Number of samples in shipping container:	<u>1 SAMPLE</u>	
7.	Number of containers per sample:	<u>(1 EACH)</u> (Or see CoC _____)	
8.	Paperwork agrees with samples?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
9.	Samples have: Tape <input type="checkbox"/> Hazard labels <input type="checkbox"/> Rad labels <input type="checkbox"/> Appropriate sample labels	<input checked="" type="checkbox"/>	
10.	Samples are: In good condition <input checked="" type="checkbox"/> Leaking <input type="checkbox"/> Broken Container <input type="checkbox"/> Missing <input type="checkbox"/>		
11.	Describe any anomalies: _____ _____ _____		
13.	Was P.M. notified of any anomalies? Yes <input type="checkbox"/> No <input type="checkbox"/>	Date _____	
14.	Received by <u>E. J. Magstad</u>	Date:	<u>11-7-01</u> Time: <u>9:30 AM</u>

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____

ORIGINAL *Keegan*
SDR # B02-005
Revision #: 0
Date Initiated: 10/11/01

SAMPLE DISPOSITION RECORD

SAF: B01-039
OU: N/A
Project ID: 221-U Tank
Task ID: 2
Sampling Event: 221-U Tank 5-6 Sludge

Laboratory: 222-S Lab Operations

Task Manager: G. M. Macfarlan

Sampling Information:

Number of Samples: 1
ID Numbers: B118T8
Matrix: Other Solid
Collection Date: 01/18/01

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory ☐ Validation Direction ☐ Sample Management
Direction Direction

Type: Incorrect Method or Analysis Performed

Description: Requested Analyses Not Performed

Disposition:

Description: The listed sample was to be analyzed for C-14 and Tc-99 to support recently identified, additional waste management data requirements for disposal of waste generated during the collection of the listed sample (see SDR B01-106). However, the laboratory mistakenly analyzed a different sample (sample B10331; see SDR B02-006). No waste disposal decisions were associated with these analyses. The laboratory was requested to expedite the analysis of the listed sample for C-14 and Tc-99.

Justification: C-14 and Tc-99 data were provided for the wrong sample. C-14 and Tc-99 data are needed for the listed sample to support waste management decisions for waste generated during the collection of sample B118T8.

Approval Signatures:

S. J. Trent *[Signature]*
Project Coordinator (Print/Sign Name)

10/16/01
Date

G. M. Macfarlan *[Signature]*
Task Manager (Print/Sign Name)

10/22/01
Date

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1584



DATE RECEIVED: 11/07/01

LVL LOT # :0111L290

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13D73	001	S	01LVG054	11/02/01	N/A	11/14/01
B13D73	001 MS	S	01LVG054	11/02/01	N/A	11/14/01
B13D73	001 MSD	S	01LVG054	11/02/01	N/A	11/14/01

LAB QC:

VELKYY	MB1	S	01LVG054	N/A	N/A	11/14/01
VELKYY	MB1 BS	S	01LVG054	N/A	N/A	11/14/01

90
11-22-01



Client: TNU-HANFORD B02-006
LVL #: 0111L290
SDG/SAF #: H1584/B02-006

W.O. #: 11343-606-001-9999-00
Date Received: 11-07-2001

GC/MS VOLATILE

One (1) soil sample was collected on 11-02-2001.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 11-14-2001.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The analysis holding time was met.
3. Non-target compounds were not detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. A spectral search was performed for Decane; however, it was not detected in the sample.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

by J. Michael Taylor
J. Michael Taylor
President
Lionville Laboratory Incorporated

12-05-01
Date

son\group\data\voaltnu-hanford\0111-290.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP** - Missed Peak: manually added peak not found by automatic quan program.
- PA** - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Volatiles by GC/MS, HSL List

Report Date: 11/30/01 15:00

Client: **TNUHANFORD B02-006 H1584** Work Order: 11343606001 Page: 1a

[illegible]

*= Outside of EPA CLP OC limits.

Cust ID: B13D73 B13D73 B13D73 VBLKYY VBLKYY BS

RFW#: 001 001 MS 001 MSD 01LVG054-MB1 01LVG054-MB1

Chlorobenzene	5 U	102 %	102 %	5 U	99 %
Ethylbenzene	5 U	6 U	6 U	5 U	5 U
Styrene	5 U	6 U	6 U	5 U	5 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS **B** **C**[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B02-006-08		Page 1 of 2					
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround				
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>		45 Days						
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex								
Shipped To TMA/RECRA 11/2/01		Offsite Property No. A020032				Bill of Lading/Air Bill No. 42357954-8729								
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 672GPM P/O DIRECT ON SOL Samples stored in Ref.# 3B at the 3728 Shipping Facility on 11/2/01. Collector not available to releinquish samples on 11/16/01 for shipment. RT 11-6-01 SAMPLE ANALYSIS				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None	
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL	
						See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385	
Sample No.		Matrix *	Sample Date	Sample Time										
B13D73		SOIL	11/2/01	0730		X	X	X	X	X	X	X	B13D83	
B13D74		SOIL												
B13D75		SOIL												
B13D76		SOIL												
B13D77		SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-90/90 - Total Sr; Total Uranium (Licanium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Licanium - DS 11/2/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D				S=Soil SB=Bottoms SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solid DL=Dry Liquid TL=Thin WL=Wipe LL=Liquid V=Vegetation X=Other		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B02-006 H1584



DATE RECEIVED: 11/07/01

LVL LOT # :0111L290

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13D73	001	S	01LE1344	11/02/01	11/08/01	11/21/01
B13D73	001 MS	S	01LE1344	11/02/01	11/08/01	11/21/01
B13D73	001 MSD	S	01LE1344	11/02/01	11/08/01	11/21/01

LAB QC:

SBLKJP	MB1	S	01LE1344	N/A	11/08/01	11/21/01
SBLKJP	MB1 BS	S	01LE1344	N/A	11/08/01	11/21/01



Client: TNU-HANFORD B02-006
LVL #: 0111L290
SDG/SAF #: H1584/B02-006

W.O. #: 11343-606-001-9999-00
Date Received: 11-07-2001

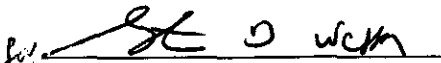
SEMIVOLATILE

One (1) soil sample was collected on 11-02-2001.

The sample and its associated QC samples were extracted on 11-08-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified and Tributylphosphate Semivolatile target compounds on 11-21-2001.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was extracted and analyzed within required holding time.
3. A non-target compound was detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. Internal standard area and retention time criteria were met.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


J. Michael Taylor
President
Lionville Laboratory Incorporated

12-05-01
Date

son\group\data\bna\tnu-hanford-0111-290.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP** - Missed Peak: manually added peak not found by automatic quantitation program.
- PA** - Peak Assignment: quantitation report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 11/30/01 14:38

RFW Batch Number: 0111L290

Client: TNUHANFORD B02-006 H1584

Work Order: 11343606001

Page: 1a

Cust ID:		B13D73	B13D73	B13D73	SBLKJP	SBLKJP BS
Sample RFW#:		001	001 MS	001 MSD	01LE1344-MB1	01LE1344-MB1
Information Matrix:		SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:		1.00	1.00	1.00	1.00	1.00
Units:		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	88 %	86 %	83 %	86 %	93 %
	2-Fluorobiphenyl	86 %	87 %	84 %	90 %	96 %
	p-Terphenyl-d14	103 %	107 %	103 %	110 %	113 %
	Phenol-d5	84 %	88 %	80 %	87 %	92 %
	2-Fluorophenol	85 %	83 %	74 %	83 %	85 %
	2,4,6-Tribromophenol	71 %	82 %	82 %	80 %	82 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Phenol		350 U	90 %	80 %	330 U	94 * %
bis(2-Chloroethyl) ether		350 U	350 U	350 U	330 U	330 U
2-Chlorophenol		350 U	84 %	73 %	330 U	87 %
1,3-Dichlorobenzene		350 U	350 U	350 U	330 U	330 U
1,4-Dichlorobenzene		350 U	79 %	69 %	330 U	81 %
1,2-Dichlorobenzene		350 U	350 U	350 U	330 U	330 U
2-Methylphenol		350 U	350 U	350 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	350 U	330 U	330 U
4-Methylphenol		350 U	350 U	350 U	330 U	330 U
N-Nitroso-Di-n-propylamine		350 U	91 %	84 %	330 U	100 %
Hexachloroethane		350 U	350 U	350 U	330 U	330 U
Nitrobenzene		350 U	350 U	350 U	330 U	330 U
Isophorone		350 U	350 U	350 U	330 U	330 U
2-Nitrophenol		350 U	350 U	350 U	330 U	330 U
2,4-Dimethylphenol		350 U	350 U	350 U	330 U	330 U
bis(2-Chloroethoxy) methane		350 U	350 U	350 U	330 U	330 U
2,4-Dichlorophenol		350 U	350 U	350 U	330 U	330 U
1,2,4-Trichlorobenzene		350 U	81 %	77 %	330 U	90 %
Naphthalene		350 U	350 U	350 U	330 U	330 U
4-Chloroaniline		350 U	350 U	350 U	330 U	330 U
Hexachlorobutadiene		350 U	350 U	350 U	330 U	330 U
4-Chloro-3-methylphenol		350 U	90 %	88 %	330 U	90 %
2-Methylnaphthalene		350 U	350 U	350 U	330 U	330 U
Hexachlorocyclopentadiene		350 U	350 U	350 U	330 U	330 U
2,4,6-Trichlorophenol		350 U	350 U	350 U	330 U	330 U
2,4,5-Trichlorophenol		890 U	890 U	890 U	830 U	830 U

* = Outside of EPA CLP QC limits.

Cust ID:

B13D73

B13D73

B13D73

SBLKJP

SBLKJP BS

RFW#:

001

001 MS

001 MSD

01LE1344-MB1

01LE1344-MB1

2-Chloronaphthalene	350 U	350 U	350 U	330 U	330 U
2-Nitroaniline	890 U	890 U	890 U	830 U	830 U
Dimethylphthalate	350 U	350 U	350 U	330 U	330 U
Acenaphthylene	350 U	350 U	350 U	330 U	330 U
2,6-Dinitrotoluene	350 U	350 U	350 U	330 U	330 U
3-Nitroaniline	890 U	890 U	890 U	830 U	830 U
Acenaphthene	350 U	84 %	79 %	330 U	87 %
2,4-Dinitrophenol	890 U	890 U	890 U	830 U	830 U
4-Nitrophenol	890 U	64 %	62 %	830 U	72 %
Dibenzofuran	350 U	350 U	350 U	330 U	330 U
2,4-Dinitrotoluene	350 U	88 %	81 %	330 U	85 %
Diethylphthalate	350 U	350 U	350 U	330 U	330 U
4-Chlorophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Fluorene	350 U	350 U	350 U	330 U	330 U
4-Nitroaniline	890 U	890 U	890 U	830 U	830 U
4,6-Dinitro-2-methylphenol	890 U	890 U	890 U	830 U	830 U
N-Nitrosodiphenylamine (1)	350 U	350 U	350 U	330 U	330 U
4-Bromophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Hexachlorobenzene	350 U	350 U	350 U	330 U	330 U
Pentachlorophenol	890 U	84 %	74 %	830 U	86 %
Phenanthrene	350 U	350 U	350 U	330 U	330 U
Anthracene	350 U	350 U	350 U	330 U	330 U
Carbazole	350 U	350 U	350 U	330 U	330 U
Di-n-Butylphthalate	350 U	350 U	350 U	330 U	330 U
Fluoranthene	350 U	350 U	350 U	330 U	330 U
Pyrene	350 U	104 %	97 %	330 U	113 %
Butylbenzylphthalate	350 U	350 U	350 U	330 U	330 U
3,3'-Dichlorobenzidine	350 U	350 U	350 U	330 U	330 U
Benzo(a)anthracene	350 U	350 U	350 U	330 U	330 U
Chrysene	350 U	350 U	350 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	350 U	350 U	350 U	330 U	330 U
Di-n-Octyl phthalate	350 U	350 U	350 U	330 U	330 U
Benzo(b)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(k)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(a)pyrene	350 U	350 U	350 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	350 U	350 U	350 U	330 U	330 U
Dibenzo(a,h)anthracene	350 U	350 U	350 U	330 U	330 U
Benzo(g,h,i)perylene	350 U	350 U	350 U	330 U	330 U
Tributylphosphate	350 U	350 U	350 U	330 U	330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13D73

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B02-006 H1584

Matrix: (soil/water) SOIL

Lab Sample ID: 0111L290-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: A112110

Level: (low/med) LOW

Date Received: 11/07/01

% Moisture: 6 decanted: (Y/N) __

Date Extracted: 11/08/01

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 11/21/01

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.952	700	JB

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJP

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B02-006 H1584

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1344-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: A112108

Level: (low/med) LOW

Date Received: 11/08/01

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 11/08/01

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 11/21/01

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.953	600	J

0111L290

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client <u>TNU-Hanford</u> <u>B02-006</u>	Refrigerator #	1	2	2					2		2	2	2		
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid													
Project # <u>11343-606-001-9999-00</u>		Solid		<u>1ag</u>	<u>1ag</u>				<u>1ag</u>		<u>1ag</u>	<u>1ag</u>	<u>1ag</u>		
Project Contact/Phone # _____	Volume	Liquid													
Lionville Laboratory Project Manager <u>OS</u>		Solid		<u>1L</u>	<u>120</u>				<u>500</u>		<u>1L</u>	<u>60</u>	<u>120</u>		
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 day</u>	Preservatives			<u>1</u>	<u>1</u>				<u>1</u>		<u>1</u>	<u>1</u>	<u>1</u>		
Date Rec'd <u>11-7-01</u> Date Due <u>12-7-01</u>	ANALYSES REQUESTED	ORGANIC						INORG							
		TCL	VOA	BNA	Reel	PCB	Herb								

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																		
			MS	MSD				UGZU	H	OGCSC	OGZSX	ODZAO	OPCO					ICPL MTCO		INOCNO	IPH	IHYND				
	001	B13D73	X	X	S	11/24/01	0730	X	X	X						X		X	X	X						

Special Instructions:

SAF # B02-006

OGCSC = Propanol, Ethanol

DATE/REVISIONS:

- AETC 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
- INORG 2. IN3N2, ICCL, ICF, ICN3, ICN2, ICN4, ICN4,
3. ISFD, INH3N, ICN4
4. _____
5. _____
6. _____

Lionville Laboratory Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered _____

Airbill #

4235 7954 87292) Ambient or ☒ chilled3) Received in Good
Condition ☒ or N4) Samples
Properly Preserved ☒ or N5) Received Within
Holding Times ☒ or N

Tamper Resistant Seal was:

1) Present on Outer
Package ☒ or N2) Unbroken on Outer
Package ☒ or N3) Present on Sample
☒ or N4) Unbroken on
Sample ☒ or NCOC Record Present
Upon Sample Rec't ☒ or NCooler
Temp. 5.6 °C

Relinquished by	Received by	Date	Time
<u>Ex</u>	<u>[Signature]</u>	<u>11/7/01</u>	<u>15:25</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between
Samples Labels and
COC Record? Y or ☒ N

NOTES:

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B02-006-08		Page 1 of 2						
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days					
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>									
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex									
Shipped To TMA/RECRA 11/2/01		Offsite Property No. A020032				Bill of Lading/Air Bill-Memo 42357954-8729									
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 672GPM P/O DIRECT ON SOIL Samples stored in Ref. # 3B at the 3728 Shipping Facility on 11/2/01 . Collector not available to relinquish samples on 11/10/01 for shipment. <div style="text-align: center;">RT 11-6-01 SAMPLE ANALYSIS</div>				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None		
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG		
				No. of Container(s)		1	1	1	1	1	1	1			
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL		
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385				
Sample No.		Matrix *		Sample Date		Sample Time									
B13D73		SOIL		11/2/01		0730			X	X	X	X	X	X	B13D83
B13D74		SOIL													
B13D75		SOIL													
B13D76		SOIL													
B13D77		SOIL													
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS					Matrix * S=Soil SB=Sludge SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trash WP=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-90-90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Lanthanum - DSW 11/2/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time									
LABORATORY SECTION		Received By		Title		Date/Time									
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time									

RECEIVED
DEC 2001

LVL LOT # : 0111L290

LAB QC:

Hyman



Analytical Report

Client: TNU HANFORD B02-006

LVL#: 0111L290

SDG/SAF#: H1584/B02-006

W.O.#: 11343-606-001-9999-00

Date Received: 11-07-01

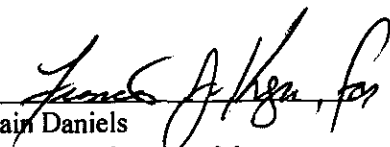
PCB

One (1) soil sample was collected on 11-02-01.

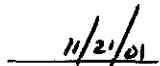
The sample and its associated QC samples were extracted on 11-08-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-17-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The sample and its associated QC samples received a sulfuric acid and a sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

pefr:\group\data\pest\11L-290.pcb


11/21/01
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form 1 and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

RFW Batch Number: Q111L290

Client: TNUHANFORD B02-006 H1584 Work Order: 11343606001 Page: 1

	Cust ID:	B13D73	B13D73	B13D73	PBLKVL	PBLKVL BS
Sample	RFW#:	001	001 MS	001 MSD	01LE1342-MB1	01LE1342-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	102 %	98 %	102 %	105 %	98 %
	Decachlorobiphenyl	95 %	99 %	100 %	90 %	96 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Aroclor-1016		35 U	35 U	35 U	33 U	33 U
Aroclor-1221		71 U	71 U	71 U	67 U	67 U
Aroclor-1232		35 U	35 U	35 U	33 U	33 U
Aroclor-1242		35 U	35 U	35 U	33 U	33 U
Aroclor-1248		35 U	35 U	35 U	33 U	33 U
Aroclor-1254		35 U	92 %	91 %	33 U	91 %
Aroclor-1260		35 U	35 U	35 U	33 U	33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



011L290

Client <u>Tnu-Hanford</u> <u>B02-006</u>		Refrigerator #	1	2	2				2		2	2	2				
Est. Final Proj. Sampling Date		#/Type Container	Liquid														
Project # <u>11343-606-001-9999-00</u>			Solid		1A	1A			1A		1A	1A	1A				
Project Contact/Phone #		Volume	Liquid														
Lionville Laboratory Project Manager <u>OS</u>			Solid		1L	120			500		1L	60	120				
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 day</u>		Preservatives															
Date Rec'd <u>11-7-01</u> Date Due <u>12-7-01</u>		ANALYSES REQUESTED →	ORGANIC					INORG									
			TOC	VOA	BNA	Reed	PCB	Herb				ICP	Metals	As	Cd		

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																
			MS	MSD				0620H	06CSC	0625X	0620	06C0												
	001	B13D73	X	X	S	11/7/01	0730	X	X	X						X		X	X	X				

Special Instructions:

SAF # B02-006

OGCSC = Propanol, Ethanol

DATE/REVISIONS:

- ACTO 1. As, Ba, Cd, Cr, Pb, Se, Ag, Be, Cu, Ni, V, Zn, Hg
- INORG 2. INJN2, ICCL, ICFL, ICN3, ICN2, ICN4, ICN5
3. ISFD, INH3N, ICN6
4. _____
5. _____
6. _____

Lionville Laboratory Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered _____

Airbill #

4235795487292) Ambient or Chilled3) Received in Good
Condition ☒ or N4) Samples
Properly Preserved ☒ or N5) Received Within
Holding Times ☒ or N

Tamper Resistant Seal was:

1) Present on Outer
Package ☒ or N2) Unbroken on Outer
Package ☒ or N3) Present on Sample
☒ or N4) Unbroken on
Sample ☒ or NCOC Record Present
Upon Sample Rec't ☒ or NCooler
Temp. 5.6 °C

Relinquished by	Received by	Date	Time
<u>Ex</u>	<u>[Signature]</u>	<u>11/7/01</u>	<u>15:25</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		
	REWRITTEN		

 Discrepancies Between
Samples Labels and
COC Record? Y or ☒ N
NOTES:

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2			
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround			
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>		45 Days					
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex							
Shipped To TMR/RECRA 11/20/01		Offsite Property No. A020032		Bill of Lading/ADR Bill No. 42357954-8729									
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 672CPM A/B DIRECT ON SOIL Samples stored in Ref. #3B at the 3728 Shipping Facility on 11/20/01. Collector not available to relinquish samples on 11/20/01 for shipment. RT 11-6-01 SAMPLE ANALYSIS				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None
				Type of Container		NG	NG	NG	NG	NG	NG	NG	NG
				No. of Container(s)		1	1	1	1	1	1	1	1
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time										
B13D73	SOIL	11/20/01	0730		X	X	X	X	X	X	X	B13D83	
B13D74	SOIL												
B13D75	SOIL												
B13D76	SOIL												
B13D77	SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix * S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (4) Gross Alpha, Gross Beta, Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Lanthanum - DSW 11/20/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
LABORATORY SECTION		Received By		Title				Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time					

February 12, 1999

Figure 1. Sample Check-in List

Date/Time Received: 11-7-01 11:25SDG#: 0111L290

Work Order Number: _____

SAF# B02-006Shipping Container ID: SML 382Chain of Custody # B02-006-08

1. Custody Seals on shipping container intact? Yes [~~1~~] No []
2. Custody Seals dated and signed? Yes [~~1~~] No []
3. Chain-of-Custody record present? Yes [~~1~~] No []
4. Cooler temperature 5.6°
5. Vermiculite/packing materials is Wet [~~1~~] Dry [~~1~~]
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes [] No [~~1~~]

8. Samples have:

 tape hazard labels ☒ custody seals appropriate sample labels

9. Samples are:

 ☒ in good condition leaking broken have air bubbles10. Were any anomalies identified in sample receipt? Yes [] No [~~1~~]

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B02-006 H1584



DATE RECEIVED: 11/07/01

LVL LOT # :0111L290

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13D73	001	S	01LJLB12	11/02/01	11/12/01	11/12/01
B13D73	001 MS	S	01LJLB12	11/02/01	11/12/01	11/12/01
B13D73	001 MSD	S	01LJLB12	11/02/01	11/12/01	11/12/01

LAB QC:

BLK	MB1	S	01LJLB12	N/A	11/12/01	11/12/01
BLK	MB1 BS	S	01LJLB12	N/A	11/12/01	11/12/01
BLK	MB1 BSD	S	01LJLB12	N/A	11/12/01	11/12/01

Rec 11/15/01

OK 11-15-01



Analytical Report

Client: TNU HANFORD B02-006
LVL#: 0111L290
SDG/SAF#: H1584/B02-008

W.O.#: 11343-606-001-9999-00
Date Received: 11-07-01

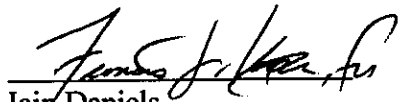
GC SCAN

One (1) soil sample was collected on 11-02-01.

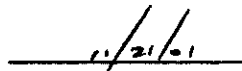
The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds Ethanol and n-Propyl Alcohol on 11-12-01.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The sample was packaged and stored as specified in the method protocol.
2. Surrogates are not currently employed in the methodology.
3. All initial calibrations were within acceptance criteria.
4. All continuing calibrations run prior to analysis were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

r:\share\gcpest\inarr\templhu291gcsc.doc


Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 11/13/01 08:31

RFW Batch Number: 0111L290

Client: TNU-HANFORD B02-006

Work Order: 11343606001 Page: 1

	Cust ID:	B13D73	B13D73	B13D73	BLK	BLK BS	BLK BSD
Sample	RFW#:	001	001 MS	001 MSD	01LJLB12-MB1	01LJLB12-MB1	01LJLB12-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg

	fl	fl	fl	fl	fl	fl
n-Propyl Alcohol	5.5 U	89 %	89 %	5.0 U	94 %	98 %
Ethanol	5.5 U	92 %	91 %	5.0 U	97 %	96 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

OK 11-15-01
JG

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS **B** **C**[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2				
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		SAF No. B02-006				Air Quality <input type="checkbox"/>						
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex								
Shipped To TM-RECREA <i>DSW 11/2/01</i>		Offsite Property No. A020032		Bill of Lading/Air Bill No. 42367954-8729										
POSSIBLE SAMPLE HAZARDS/REMARKS <i>FIELD INSTRUMENTS INDICATE 672CPM P/B</i> <i>DIRECT ON SOL</i> Samples stored in Ref. # 3B at the 3728 Shipping Facility on 11/2/01 . Collector not available to relinquish samples on 11/16/01 for shipment.				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None	
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL	
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Hydrazine - D1385			
RT 11-6-01 SAMPLE ANALYSIS														
Sample No.		Matrix *		Sample Date		Sample Time								
B13D73		SOIL		11/2/01		0730		X	X	X	X	X	X	
B13D74		SOIL												
B13D75		SOIL												
B13D76		SOIL												
B13D77		SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (1) Gases Alpha; Gases Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89/90 - Total Sr; Total Uranium (Uranium); Isotopic Phosphorus; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Uranium - <i>DSW 11/2/01</i> (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D						
<i>DSWATSON/FSWAT</i>		11/2/01 11:15		REF. 3B 3728 BLDG.		11/2/01								
<i>R. J. R. Thore</i>		11/2/01 11:20		<i>R. J. R. Thore</i>		11/2/01 0700								
<i>R. J. R. Thore</i>		11/2/01 0700		<i>R. J. R. Thore</i>		11/2/01 0700								
<i>R. J. R. Thore</i>		11/2/01 0700		<i>R. J. R. Thore</i>		11/2/01 0700								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
<i>Med Ex</i>		11-7-01 15:25		<i>Med Ex</i>		11-7-01 15:25								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title		Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time								

February 12, 1999

Figure 1. Sample Check-in List

Date/Time Received: 11-7-01 11:25SDG#: 0111290

Work Order Number: _____

SAF# B02-006Shipping Container ID: SML 382Chain of Custody # B02-006-08

1. Custody Seals on shipping container intact? Yes ☒ No ☐
2. Custody Seals dated and signed? Yes ☒ No ☐
3. Chain-of-Custody record present? Yes ☒ No ☐
4. Cooler temperature 5.6°C
5. Vermiculite/packing materials is Wet ☒ Dry ☐
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes ☐ No ☒

8. Samples have:

☐ tape☐ hazard labels☒ custody seals☐ appropriate sample labels

9. Samples are:

☒ in good condition☐ leaking☐ broken☐ have air bubbles10. Were any anomalies identified in sample receipt? Yes ☐ No ☒

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____



Analytical Report

Client: TNU-HANFORD B02-006
LVL#: 0111L290
SDG/SAF#: H1584/B02-006

W.O.#: 11343-606-001-9999-00
Date Received: 11-07-01

METALS CASE NARRATIVE

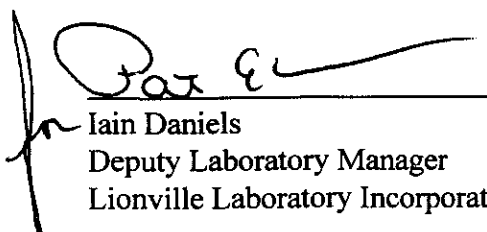
1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

The sample was rerun for Beryllium in file PS1115A. The Titanium result was high in file TA1114C. Beryllium is an IEC for Titanium on the Trace ICP. Therefore Beryllium was rerun on the Poly ICP.

3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated
gmb/m11-290

11-28-01
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

lot#: 0111290

Leaching Procedure: 1310 1311 1312 Other:

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
Other:

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041</u> ^s	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A</u> ^s	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> ⁱ	<u>200.7</u> ⁱ		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A</u> ^s	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<u>6010B</u> <u>7191</u> ^s	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> ^s	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421</u> ^s	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> ^s	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> ^s <u>7471A</u> ^s	<u>245.1</u> ² <u>245.5</u> ²			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> ^s	<u>200.7</u> <u>258.1</u> ^s			<u>99</u>
Rare Earths	<u>6010B</u> ⁱ	<u>200.7</u> ⁱ		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740</u> ^s	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> ⁱ	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761</u> ^s	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> ^s	<u>200.7</u> <u>273.1</u> ^s			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> ^s	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> ⁱ	<u>200.7</u> ⁱ		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> ⁱ	<u>200.7</u> ⁱ		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- B = Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

Q QUALIFIERS

- E = The reported value is estimated because of the presence of interference.
- M = Duplicate injection precision not met.
- N = Spiked sample recovery not within control limits.
- S = The reported value was determined by the Method of Standard Additions (MSA).
- W = Post Digestion spike for Furnace AA analysis is out of control limits (85 -115 %), while sample absorbance is less than 50% of spike absorbance.
- * = Duplicate analysis not within control limits.
- + = Correlation coefficient for the MSA is less than 0.995.

ABBREVIATIONS

- PB = Method or Preparation Blank.
- S = Matrix Spike.
- T = Matrix Spike Duplicate.
- R or D = Sample Replicate

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/O-01/97

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/27/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-001	B13D73	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	3.6	MG/KG	0.32	1.0
		Barium, Total	96.9	MG/KG	0.01	1.0
		Beryllium, Total	0.50	MG/KG	0.04	1.0
		Cadmium, Total	0.25	MG/KG	0.03	1.0
		Chromium, Total	7.9	MG/KG	0.06	1.0
		Copper, Total	15.9	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.0	MG/KG	0.1	1.0
		Lead, Total	3.8	MG/KG	0.19	1.0
		Selenium, Total	0.75	MG/KG	0.22	1.0
		Vanadium, Total	78.0	MG/KG	0.05	1.0
		Zinc, Total	54.7	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/27/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	01L0745-MB1	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Arsenic, Total	0.32 u	MG/KG	0.32	1.0
		Barium, Total	0.06	MG/KG	0.01	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.11	MG/KG	0.06	1.0
		Copper, Total	0.33	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.35	MG/KG	0.19	1.0
		Selenium, Total	0.23	MG/KG	0.22	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	0.12	MG/KG	0.03	1.0
BLANK1	01C0359-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/27/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	B13D73	Silver, Total	4.5	0.06u	5.0	90.0	1.0
		Arsenic, Total	177	3.6	199	87.4	1.0
		Barium, Total	268	96.9	199	86.1	1.0
		Beryllium, Total	4.7	0.50	5.0	83.9	1.0
		Cadmium, Total	4.6	0.25	5.0	87.0	1.0
		Chromium, Total	23.4	7.9	19.9	77.9	1.0
		Copper, Total	38.9	15.9	24.8	92.7	1.0
		Mercury, Total	0.16	0.02u	0.15	103.9	1.0
		Nickel, Total	52.8	10.0	49.7	86.1	1.0
		Lead, Total	46.6	3.8	49.7	86.1	1.0
		Selenium, Total	166	0.75	199	83.0	1.0
		Vanadium, Total	123	78.0	49.7	90.9	1.0
		Zinc, Total	99.7	54.7	49.7	90.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/27/01

CLIENT: TNUHANFORD B02-006 H1584

LVL LOT #: 0111L290

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION FACTOR (REP)
			RESULT			
*****	*****	*****	*****	*****	*****	*****
-001REP	B13D73	Silver, Total	0.06u	0.06u	NC	1.0
		Arsenic, Total	3.6	3.3	8.7	1.0
		Barium, Total	96.9	83.5	14.9	1.0
		Beryllium, Total	0.50	0.49	3.2	1.0
		Cadmium, Total	0.25	0.21	19.5	1.0
		Chromium, Total	7.9	5.0	45.0	1.0
		Copper, Total	15.9	16.4	3.1	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	10.0	7.9	23.5	1.0
		Lead, Total	3.8	3.5	8.2	1.0
		Selenium, Total	0.75	0.35	73.9	1.0
		Vanadium, Total	78.0	76.7	1.7	1.0
		Zinc, Total	54.7	51.8	5.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/27/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCS1	01L0745-LC1	Silver, LCS	44.3	50.0	MG/KG	88.6
		Arsenic, LCS	987	1000	MG/KG	98.7
		Barium, LCS	483	500	MG/KG	96.6
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	125	125	MG/KG	100.1
		Nickel, LCS	197	200	MG/KG	98.6
		Lead, LCS	241	250	MG/KG	96.4
		Selenium, LCS	961	1000	MG/KG	96.1
		Vanadium, LCS	250	250	MG/KG	99.9
		Zinc, LCS	96.8	100	MG/KG	96.8
LCS1	01C0359-LC1	Mercury, LCS	2.5	2.5	MG/KG	99.6

REAS B C D E F
A X B D E F

Discrepancies Between
Samples Labels and
COC Record? Y or **(N)**
NOTES:

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2				
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days				
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Samplin		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>								
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex								
Shipped To DMRECRA		Offsite Property No. A020032		Bill of Lading/Air Bill No. 42357954-8729										
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 672CPM P/B DIRECT ON SOIL Samples stored in Ref. # 33 at the 3728 Shipping Facility on 11/2/01 . Collector not available to relinquish samples on 11/6/01 for shipment. RT 11-6-01 SAMPLE ANALYSIS				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None	
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	
				Volume		1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL	
						See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - R082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385	
TIE TO														
Sample No.		Matrix *		Sample Date		Sample Time								
B13D73		SOIL		11/2/01		0730								
B13D74		SOIL												
B13D75		SOIL												
B13D76		SOIL												
B13D77		SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (1) Gamma Alpha: Gamma-Dens; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-89,90 - Total Sr; Total Uranium (Uranium); Isotope Plutonium; Isotope Thorium (Thorium-232); Americium-241; Neptunium-237; Isotope Uranium - DSW 11/2/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D				S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WB=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
DSWATSON, SWA		11/2/01 11:15		REF. 33 3728 AG		11/2/01								
R. P. R. Thore		11/2/01 0700		R. P. R. Thore		11/2/01 0700								
R. P. R. Thore		11/2/01 0700		R. P. R. Thore		11/2/01 0700								
Med Ex		11-7-01 15:25		Med Ex		11-7-01 15:25								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						



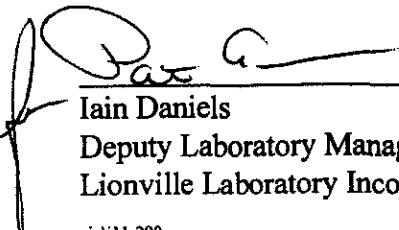
Analytical Report

Client: TNU-HANFORD B02-006 H1584
LVL#: 0111L290

W.O.#: 11343-606-001-9999-00
Date Received: 11-07-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain of custody.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated
njpl11-290

11-30-01
Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	— D2216-80		
% Moisture	— D2216-80		— ILMO4.0 (e)
% Solids	✓ D2216-80		— ILMO4.0 (e)
% Volatile Solids	— D2216-80		
ASTM Extraction in Water	— D3987-81/85		
BTU	— D240-87		
CEC		— 9081	— c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		— 1110(mod) — 9045C	
Cyanide, Total		✓ 9010B / 9014	— ILMO4.0 (e)
Cyanide, Reactive		— Section 7.3/9014	
Halides, Extractable Organic		— 9020B	— EPA 600/4/84-008
Halides, Total		— 9020B	— EPA 600/4/84-008
EP Toxicity		— 1310A	
Flash Point		— 1010	
Ignitability		— 1010	
Oil & Grease		— 9071A	
Carbon, Total Organic		— 9060	— Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	— D240-87(mod)	— 5050	
Petroleum Hydrocarbons, Total Recoverable		— 9071	— EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		— Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	— D1429-76C/	— D5057-90	
Sulfur, Total		— 9056	
Synthetic Preparation Leach		— 1312	
Paint Filter		— 9095A	

Other: *Hydrazine*

Method: *USAFSAM - Report TR-82-29*

Other: *Nitrate Nitrite*

Method: *EPA 353.2 (mod.)*

Ammonia

EPA 350.3 (mod.)

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } *EPA 300.0 (mod.)*

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/26/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B13D73	% Solids	94.0	%	0.01	1.0
		Chloride by IC	3.1	MG/KG	1.3	1.0
		Fluoride by IC	2.7	u MG/KG	2.7	1.0
		Nitrite by IC	1.33	u MG/KG	1.33	1.0
		Nitrate by IC	44.0	MG/KG	1.33	1.0
		Cyanide, Total	0.44	u MG/KG	0.44	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Chromium VI	0.43	u MG/KG	0.43	1.0
		Sulfate by IC	13.5	MG/KG	1.3	1.0
		Hydrazine	1.1	u MG/KG	1.1	1.0
		Nitrate Nitrite	9.5	MG/KG	0.21	1.0
		Ammonia, as N	2.6	u MG/KG	2.6	1.0
		pH	8.8	SOIL PH	0.01	1.0
		Sulfide	39.3	u MG/KG	39.3	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/26/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	01LYC076-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
BLANK10	01LIC075-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	2.5 u	MG/KG	2.5	1.0
		Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	01LC099-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI087-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LHZ005-MB1	Hydrazine	1.0 u	MG/KG	1.0	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	01LAMA53-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSD063-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/26/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	B13D73	Chloride by IC	30.6	3.1	27.0	101.8	1.0
		Fluoride by IC	56.5	0.0	53.2	106.2	1.0
		Nitrite by IC	26.0	1.33u	26.6	97.8	1.0
		Nitrate by IC	103	44.0	53.2	110.5	2.0
		Cyanide, Total	4.58	0.44u	5.22	87.7	1.0
		Phosphate by IC	26.7	1.3 u	26.6	100.5	1.0
		Soluble Chromium VI	5.3	0.43u	4.3	118.7	1.0
		Insoluble Chromium VI	1550	0.43u	1440	107.5	100
		Sulfate by IC	41.5	13.5	26.6	105.4	1.0
		Hydrazine	5.4	1.1 u	5.3	101.9	1.0
		Nitrate Nitrite	37.4	9.5	26.3	106.3	5.0
		Ammonia, as N	145	2.6 u	133	108.8	1.0
		Sulfide	540	19.7	553	94.0	1.0
BLANK10	01LYC076-MB1	Chloride by IC	24.5	1.2 u	25.0	98.0	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.0	1.0
BLANK10	01LIC075-MB1	Chloride by IC	24.7	1.2 u	25.0	98.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.1	1.0
		Nitrite by IC	25.5	1.25u	25.0	102.0	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.8	1.0
		Phosphate by IC	26.1	1.2 u	25.0	104.4	1.0
		Sulfate by IC	24.3	1.2 u	25.0	97.1	1.0
BLANK10	01LVI087-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.5	1.0
		Insoluble Chromium VI	1190	0.40u	1220	97.4	100
BLANK10	01LHZ005-MB1	Hydrazine	5.1	1.0 u	5.0	101.4	1.0
BLANK10	01LN3061-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	01LAMA53-MB1	Ammonia, as N	96.8	2.5 u	100	96.8	1.0
		Ammonia, as N MSD	105	2.5 u	100	105.0	1.0
BLANK10	01LSD063-MB1	Sulfide	513	40.0 u	542	94.6	1.0
		Sulfide MSD	517	40.0 u	542	95.3	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/26/01

CLIENT: TNUHANFORD B02-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	01LAMA53-MB1	Ammonia, as N	96.8	105.0	8.2
BLANK10	01LSD063-MB1	Sulfide	94.6	95.3	0.78

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/26/01

CLIENT: TNUHANFORD B02-006 H1584

LVL LOT #: 0111L290

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION
			RESULT			FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	B13D73	% Solids	94.0	93.8	0.17	1.0
		Chloride by IC	3.1	4.3	32.8	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.33u	1.33u	NC	1.0
		Nitrate by IC	44.0	42.9	2.4	1.0
		Cyanide, Total	0.44u	0.52u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Chromium VI	0.43u	0.43u	NC	1.0
		Sulfate by IC	13.5	14.4	6.6	1.0
		Hydrazine	1.1 u	1.1 u	NC	1.0
		Nitrate Nitrite	9.5	11.0	14.6	1.0
		Ammonia, as N	2.6 u	3.1	NC	1.0
		pH	8.8	8.8	0.0	1.0
		Sulfide	39.3 u	44.9 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/26/01

CLIENT: TNUHANFORD BQ2-006 H1584
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0111L290

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCSS1	01LC099-LCS1	Cyanide, Total LCS	1.85	2.0	MG/KG	92.6
LCSS2	01LC099-LCS2	Cyanide, Total LCS	10.0	10.0	MG/KG	100.4

AREAS B C
A A B DS 17101

[illegible]

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2			
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround			
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Sampling		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>		45 Days					
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex							
Shipped To FMA/RECRA 11/2/01		Offsite Property No. A020032		Bill of Lading/Air Bill No. 42357954-8729									
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 6720M P/B DIRECT ON SOIL Samples stored in Ref. # 3B at the 3728 Shipping Facility on 11/2/01. Collector not available to relinquish samples on 11/6/01 for shipment. RT 11-6-01 SAMPLE ANALYSIS				Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)	1	1	1	1	1	1	1		
				Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL	
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385		
Sample No.	Matrix *	Sample Date	Sample Time										
B13D73	SOIL	11/2/01	0730		X	X	X	X	X	X	X	B13D83	
B13D74	SOIL												
B13D75	SOIL												
B13D76	SOIL												
B13D77	SOIL												
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix * S=Soil SL=Solids SD=Solid SL=Sediment W=Water O=Oil AA=Air DS=Drum Solids DL=Drum Liquids TW=Trace WH=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (1) Gross Alpha, Gross Beta, Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-90, Total Sr, Total Uranium (Uranium); Isotope Phosphorus; Isotope Thorium (Thorium-232); Americium-241; Neptunium-237; Isotope Uranium - DSW 11/2/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time							
LABORATORY SECTION		Received By		Title		Date/Time							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time							

February 12, 1999

Figure 1. Sample Check-in List

Date/Time Received: 11-7-01 11:25SDG#: 0111L290

Work Order Number: _____

SAF# B02-006Shipping Container ID: SML 382Chain of Custody # B02-006-08

1. Custody Seals on shipping container intact? Yes ☒ No ☐
2. Custody Seals dated and signed? Yes ☒ No ☐
3. Chain-of-Custody record present? Yes ☒ No ☐
4. Cooler temperature 5.6°
5. Vermiculite/packing materials is Wet ☐ Dry ☒
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes ☐ No ☒

8. Samples have:

☐ tape☐ hazard labels☒ custody seals☐ appropriate sample labels

9. Samples are:

☒ in good condition☐ leaking☐ broken☐ have air bubbles10. Were any anomalies identified in sample receipt? Yes ☐ No ☒

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B02-006 **H1584**



RFW LOT # :0111L290

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13D73	001	S	01LE1343	11/02/01	11/07/01	11/12/01	11/13/01
B13D73	001 MS	S	01LE1343	11/02/01	11/07/01	11/12/01	11/13/01
B13D73	001 MSD	S	01LE1343	11/02/01	11/07/01	11/12/01	11/13/01

LAB QC:

BLK	MB1	S	01LE1343	N/A	N/A	11/12/01	11/13/01
BLK	MB1 BS	S	01LE1343	N/A	N/A	11/12/01	11/13/01

cc 11-14-01
Flyer #11/16



Analytical Report

Client: TNU HANFORD B0-006
LVL#: 0111L290
SDG/SAF#: H1584/B02-006


W.O.#: 11343-606-001-9999-00
Date Received: 11-07-01

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 11-02-01.

The sample and its associated QC samples were prepared on 11-12-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-13-01. The analysis met the intent of method WTPH-D.

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Jain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated


Date

R:\share\dro\11-290.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g. 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates a compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike reagent grade water spiked with the matrix spiking solution. Spike recoveries are reported.
- BSD** = Indicates a blank spike duplicate.
- MS** = Indicates a matrix spike.
- MSD** = Indicates a matrix spike duplicate.
- NA** = Not Applicable.
- NS** = Not spiked.
- DF** = Dilution factor.
- NR** = Not required.
- SP** = Indicates a spiked compound.

DIESEL RANGE ORGANICS BY GC

Report Date: 11/14/01 08:28

RFW Batch Number: 0111L290

Client: TNU-HANFORD B02-006

Work Order: 11343606001 Page: 1

4

	Cust ID:	B13D73	B13D73	B13D73	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LE1343-MB1	01LE1343-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg

	p-Terphenyl	46	%	87	%	91	%	92	%	79	%
		fl		fl		fl		fl		fl	
Diesel Range Organics		12.8	U	82	%	89	%	12.0	U	78	%
Kerosene		12.8	U	NS		NS		12.0	U	NS	

UK11-14-01

Flora ... 1.4/10

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS B C

<p>Special Instructions: SAC # B02-006</p> <p>OGCSC = Propanol, Ethanol</p>	<p>DATE/REVISIONS:</p> <p><u>AETO</u> 1. <u>As, Ba, Cd, Cr, Pb, Se, Ag, Bz, Cu, Ni, V, Zn, Hg</u></p> <p><u>INREG</u> 2. <u>INJN2, ICCL, ICFL, ICAN, ICAW, ICPH, ICSO4</u></p> <p>3. <u>ISFD, INH3N, ICAN</u></p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p>
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<p>Lionville Laboratory Use Only</p>			
<p>Samples were:</p> <p>1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____</p> <p>Airbill # <u>4235 7994 8729</u></p> <p>2) Ambient or <u>Chilled</u></p> <p>3) Received in Good Condition <input checked="" type="checkbox"/> or N</p> <p>4) Samples Properly Preserved <input checked="" type="checkbox"/> or N</p> <p>5) Received Within Holding Times <input checked="" type="checkbox"/> or N</p>	<p>Tamper Resistant Seal was:</p> <p>1) Present on Outer Package <input checked="" type="checkbox"/> or N</p> <p>2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N</p> <p>3) Present on Sample <input checked="" type="checkbox"/> or N</p> <p>4) Unbroken on Sample <input checked="" type="checkbox"/> or N</p> <p>COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N</p> <p>Cooler Temp. <u>5.6</u> °C</p>		

Relinquished by	Received by	Date	Time
40) Ex	<i>[Signature]</i>	11/7/01	15:25

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or ☒ N

NOTES:

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B02-006-08		Page 1 of 2		
Collector Bowers DL/Watson D		Company Contact Cearlock, CS		Telephone No. 372-9638		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround		
Project Designation 200 Area Source Characterization 200-CS-1 OU - Soil Sampling		Sampling Location 200 East		SAF No. B02-006		Air Quality <input type="checkbox"/>		45 Days				
Ice Chest No. SML-382		Field Logbook No. EL 1551		COA B20CS1673C		Method of Shipment Fed Ex						
Shipped To T.M. RECRA		Offsite Property No. A020032		Bill of Lading/Air Bill No. 42357954-8729								
POSSIBLE SAMPLE HAZARDS/REMARKS FIELD INSTRUMENTS INDICATE 672PPM P/B DIRECT ON SOIL Samples stored in Ref. #33 at the 3728 Shipping Facility on 11/2/01. Collector not available to relinquish samples on 11/16/01 for shipment. RT 11-6-01 SAMPLE ANALYSIS				Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	None
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1
				Volume	1000mL	500mL	1000mL	1000mL	120mL	60mL	120mL	120mL
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	PCBs - 8082	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add- On) (1- Propanol, Ethanol)	Hydrazine - D1385	
TIC TO												
Sample No.	Matrix *	Sample Date	Sample Time									
B13D73	SOIL	11/2/01	0730		X	X	X	X	X	X	X	
B13D74	SOIL											
B13D75	SOIL											
B13D76	SOIL											
B13D77	SOIL											
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		** The Laboratory is to report Decane as a TIC if present in detectable quantities ** The laboratory is to report both diesel and kerosene range compounds from WTPH-D analysis. (4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-226); Strontium-90/90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Neptunium-237; Isotopic Lanthanum - DSW 11/2/01 (2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196 (3) NO2/NO3 - 353.2; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010 (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION		Received By		Title				Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time				

February 12, 1999

Figure 1. Sample Check-in List

Date/Time Received: 11.7.01 11:25SDG#: 0111L290

Work Order Number: _____

SAF# B02-006Shipping Container ID: SML 382Chain of Custody # B02-006-08

1. Custody Seals on shipping container intact? Yes [☒] No [☐
2. Custody Seals dated and signed? Yes [☒] No [☐
3. Chain-of-Custody record present? Yes [☒] No [☐
4. Cooler temperature 5.6°C
5. Vermiculite/packing materials is Wet [☒] Dry [☐
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes [☐] No [☒

8. Samples have:

☐ tape☐ hazard labels☒ custody seals☐ appropriate sample labels

9. Samples are:

☒ in good condition☐ leaking☐ broken☐ have air bubbles10. Were any anomalies identified in sample receipt? Yes [☐] No [☒

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____